



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#9/C

In re Application of Dr. Norbert Diekhans) Art Unit 3671
Application No. 09/640,126) Examiner: Meredith C. Petravick
Filed: 16 August 2000)
For: *Combine With a Device for Automatic*)
Cleaning Regulation) Peoria, IL 61602-1241
Attorney Docket No. 3869/59156-083) 23 April 2002
Box AF
Commissioner for Patents
Washington, D.C. 20231

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OFFICE OF PETITIONS

RESPONSE AND AMENDMENT AFTER FINAL REJECTION

In response to the Office Action dated 16 July 2001, please amend the above-referenced application as follows:

In the Specification

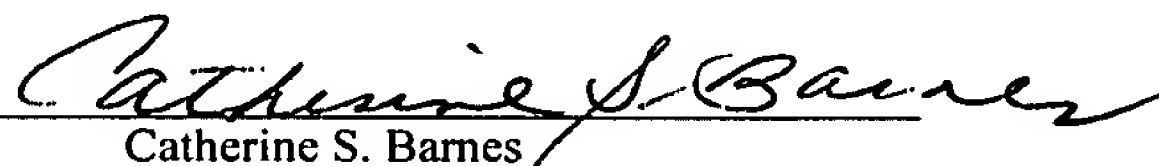
Please delete the first paragraph on page 1, lines 3-5, and replace it with the following:

This application is a continuation of PCT Application No. PCT/EP99/00963 filed 13 February 1999 and which named the United States as a designated country. PCT Application PCT/EP99/00963 was published on 26 August 1999 as Publication No. WO 99/41967 and claims priority of German Application 198 07 145.0 filed on 20 February 1998.

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Date of Deposit 23 April 2002

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Catherine S. Barnes

In the Claims

Please delete claims 1 and 16 and substitute claims 2-15 and 17 with the following:

2. (Amended) A combine harvester as in claim 17, wherein the setting of the sieve opening width and the rotational speed of the fan is effected automatically in dependence on the measuring signal from the load sensor.

3. (Twice Amended) A combine harvester as in claim 17, wherein the load sensor detects the amount of straw in a feeder housing of the combine harvester.

4. (Amended) A combine harvester as in claim 17, wherein the load sensor detects the moisture content of the straw.

5. (Amended) A combine harvester as in claim 17, wherein the load sensor detects the amount of crop being harvested.

6. (Amended) A combine harvester as in claim 17, wherein the load sensor detects the ground speed of the combine harvester.

7. (Amended) A combine harvester as in claim 17, wherein the setting of the opening width of the sieve device is dependent on the rotational speed of the fan.

8. (Amended) A combine harvester as in claim 17, including an evaluating unit for calculating a control signal representative of the desired cleansing setting by means of a programmed function in dependence on the measuring signal.

9. (Amended) A combine harvester as in claim 8, wherein the evaluating unit comprises a memory in which a plurality of previously determined dependencies between the desired sieve opening widths and/or the rotational speed of the fan and at least one measuring signal are stored in the form of a table or a characteristic curve or a family of characteristic curves, whereby the control signal is determined with the aid of the table or the characteristic curve.

10. (Amended) A combine harvester as in claim 8, wherein the evaluating unit determines the cleansing setting from a combination of several measuring signals.

11. (Amended) A combine harvester as in claim 8, wherein a new setting for the cleaning mechanism is produced by the evaluating unit in such a manner that the altered setting only becomes effective when the crop has traversed the path between the load sensor and the cleaning mechanism.

12. (Amended) A combine harvester as in claim 17, including means for altering the programmed function and the stored dependencies.

13. (Amended) A combine harvester as in claim 17, wherein the sieve device comprises an upper sieve and a lower sieve whose opening widths are each adjustable by means of a respective adjusting member whereby the opening width of the upper sieve and the opening width of the lower sieve are adjustable to different extents in dependence on the measuring signal.

14. (Amended) A combine harvester as in claim 13, wherein at least one of the upper and lower sieves comprises at least two sub-sieves whose opening widths are each adjustable by means of a respective adjusting member whereby the opening widths of the sub-sieves are adjustable to different extents in dependence on the measuring signal.

C3 15. (Amended) A combine harvester as in claim 17, including means for restricting the possible adjustment ranges by predetermined limiting values.

C4 17. (Twice Amended) A combine harvester incorporating a cleaning mechanism which comprises a sieve⁷ for cleaning the crop produced by a threshing and separating mechanism, a fan for forcing a blast of air through the sieve device, an adjusting member for automatically adjusting opening widths of the sieve device, at least one load sensor⁽⁴³⁺⁴⁴⁾ having a signal which is a measure of the loading to which the cleaning mechanism is subjected by the threshed crop, whereby the adjusting of the sieve opening width is effected automatically only in dependence on the measuring signal from the load sensor.

Remarks

Priority

The specification has been amended to clarify applicant's claim of foreign priority under 35 USC §119. The above application claimed priority of PCT Application No. PCT/EP99/00963 filed on 13 February 1999, which claimed priority of German Application No. 198 07 145.0 filed on 20 February 1998. A certified copy of German Application 198 07 145.0 will be furnished as soon as it is available.

Status of Claims

Claims 1 and 16 have been cancelled; therefore, claims 2-15 and 17 remain pending in the above-mentioned application including independent claim 17.

Claim 17 has been clarified by the addition of the language "by the threshed crop". On page one, lines 12-13, of the specification is a description that "[t]he threshed crop produced by the threshing and separating mechanisms is mixed with chaff ***." The specification goes on to talk about the "cleaning mechanism." Claim 17 calls for "a cleaning mechanism which comprises a sieve for cleaning the crop produced by a threshing and separating mechanism"; hence, the crop is the threshed crop. Also in claim 17 the term "test signal" (first occurrence) has been changed to read merely "signal" and the same term (second occurrence) has been changed to read "measuring signal." This has been done to provide consistency throughout the claims. No new matter has been added by these clarifications.

Claim Rejections - 35 USC §112, ¶ 1 and 2

The Examiner has maintained the 35 U.S.C. § 112, ¶ 1 and 2 rejections. Claim 15 reads, in pertinent part, "means for restricting the possible adjustment ranges by predetermined limiting values." The Examiner indicates and understands that claim 15 refers to the adjustment of the sieve. The sieve 2 has an upper sieve 2B and a lower sieve 2B (Page 5, lines 29-30). The sieves 2A, 2B have adjustment members or means 20A, 20B, respectively (Page 6, lines 13-14 and Fig. 1). The adjustment members 20A, 20B can be an electro-mechanical driven screw which adjusts the

inclination of the lamella through the medium lever (Page 6, lines 14-16). The upper sieve 2B can be varied over a range of 8 to 24 mm, and the lower sieve 2A can be varied over a range of 2 to 20 mm (Page 6, lines 17-19). The ranges may be predefined on the basis of limiting values to prevent the cleaning mechanism 2 from being adjusted to such an extent that it would reach the end stops of the adjusting members 20A, 20B (Page 9, lines 3-8 and also see Page 8, lines 8-11). The sensor 4 signals the adjusting members 20A, 20B via the evaluation unit 8 (Page 8, lines 4-7). The sieves 2A, 2B are adjusted in dependence on the signal from the sensor 4 (Page 4, lines 11-12). The evaluation unit 8 comprises a memory which determines the setting values and sensor signal (Page 5, lines 4-6). The evaluation unit 8 uses an internally programmed function for calculating a control signal for the adjusting members 20A, 20B (Page 5, lines 1-3).

Based on this description, it is known that the upper sieve 2B and the lower sieve 2A have ranges (8 to 24 mm and 2 to 20 mm, respectively), and these ranges can be predefined on the basis of limiting values. It is known that the evaluation unit 8 controls the adjusting members 20B, 20A, which control the upper sieve 2B and the lower sieve 2A, respectively. Therefore, it follows that the means for restricting the possible adjustment ranges (8 to 24 mm and 2 to 20 mm) is the evaluation unit 8. The evaluation unit 8 does this via signals. Turning now to the predetermine limiting values, it is well-known by those skilled in the art that ranges can be limited (e.g., limit a range of 8 to 24 mm to 12 to 16 mm), and this was discussed in the specification (Page 9, lines 3-8 and see also Page 8, lines 8-11). In this case, the evaluation unit 8 has an internal program function, and it is this means that limits the ranges of the sieves 2A, 2B. Applicant respectfully requests reconsideration on the 35 U.S.C. § 112 rejections because the “means for restricting the possible adjustment ranges by predetermined limiting values” is described in the specification to enable one skilled in the art to make the invention.

Claim Rejections - 35 USC §102

The Examiner has rejected claims 1, 2, 4-6, 8-12, 13 and 16-17 under 35 U.S.C. § 102(e) as being anticipated by United States Patent No. 5,995,895 to Watt et al. (hereinafter "Watt").

The only remaining independent claim, claim 17, reads in pertinent part: "at least one load sensor having a test signal which is a measure of the **loading to which the cleaning mechanism** is subjected by the threshed crop, whereby the adjusting of the sieve opening width is effected automatically **only** in dependence on the test signal from the load sensor." (emphasis added) Although additional arguments are presented below, it appears that the Examiner has overlooked the emphasized limitation. Also, applicant claims "a measure of the loading to which the cleaning mechanism is subjected by the threshed crop." This is in stark contrast to a measure of the loading to which the combine harvester is subjected.

Watt does not disclose a "load sensor" for detecting the amount of crop being harvested or the ground speed of combine harvester. In contrast, Watt discloses: "A control system for controlling a vehicle system at least partly in response to an anticipated condition along the vehicle's course of travel disclosed herein. (Abs., lines 1-3) Watt predicts anticipated conditions by using geo-referenced maps.

Further, numeral 80 is Watt is not a load sensor but refers to a "---vehicle 10 is equipped with a site-specific core system 80 including a data processing unit (DPU) for receiving, processing and communicating site-specific data." The sensor listed on Column 14, Lines 14-22 and Lines 31-38 refers to a **position** sensor for the sieve. This is recited as follows: "Control circuit 310 generates control signals applied to drive circuit 342 via lines 344, and receives feedback signals from a **position** sensor 346 via lines 348 to allow for closed-loop control" (Column 14, Lines 19-22). This position sensor that detects the position of the sieve is not a load sensor. Therefore, it is respectfully believed that proper application of a reference described and claimed in a patent application requires broadly, that the anticipatory device be substantially the same in structure, function and result. In this case, Watt is directed to anticipated geophysical considerations. There is a closed loop system that controls sieve opening and closing but **does not depend** on machine load conditions. It does not appear to

disclose a system that regulates sieve opening based on sensed crop loading conditions affecting the combine harvester in real-time. It is respectfully believed that the applicant's claim limitations referring to sensing loading should not be ignored.

It is respectfully believed that Watt does not contain any structure referring to the measurement of real-time load conditions and merely uses sensors to detect sieve position and other values that are contrasted to geophysical maps to **anticipate** conditions in the vehicle's course of travel. **Anticipating conditions** is the exact opposite of measuring load conditions in real-time and would teach an individual away from that concept of ascertaining real-time load conditions and adjusting the sieve accordingly. The Supreme Court has held that "teaching away" from the claimed invention by the prior art is an important indication of nonobviousness, not to mention a lack of anticipation. In this case, a load sensor that is present for the purpose of sensing the position of a sieve and anticipating course of travel conditions teaches an individual away from a structure that is designed to measure load on a combine harvester and alter the sieve opening based on this real-time sensed data. It is respectfully believed that teaching away is the antithesis of the art suggesting that the person of ordinary skill go in the claimed direction and is a per se demonstration of lack of prima facie obviousness, not to mention anticipation.

It is respectfully believed that for a valid 35 U.S.C. §102 rejection, the applicant's invention must be identically disclosed in a single reference. This is not the case with the use of a core system 80 or a sieve position sensor 332 disclosed in Watt. It is respectfully believed that this unique structural and functional difference should not be ignored. There is a ground speed sensor 92; however, a load sensor does not appear to be present in Watt.

Therefore, claim 17 is respectfully believed to overcome the rejection under 35 U.S.C. § 102 and is believed to distinguish patentably over Watt.

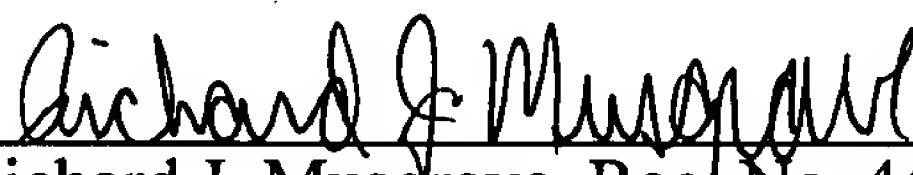
Claims 2-15 depend from and have all of the limitations of claim 17 and are, therefore, believed to distinguish over Watt in the same manner as claim 17. Therefore, it is respectfully believed that claims 2-15 and 17 overcome this rejection under 35 U.S.C. § 102 and are patentable over Watt.

Claim Rejections - 35 USC §103

Claims 3, 7, 14 and 15 were rejected under 35 U.S.C. § 103 as being obvious over Watt in view of Kruse, Herlitzius or Hofer. Because claim 17 from which claims 3, 7, 14 and 15 depend have been distinguished over Watt, it is believed that these claims are patentably distinct over the references in combination or individually.

In view of the above, it is respectfully believed that all the presently submitted claims are allowable, and a formal Notice of Allowance is courteously solicited. If there are any questions or comments about this Response, please telephone the undersigned.

Respectfully submitted,


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Version With Markings to Show Changes Made

Following is a marked-up version of the application with all changes shown by conventional comparison (underling and bracketing).

In the Specification

Following is a marked version of the first paragraph on page 1, lines 3-5:

This application is a continuation of PCT Application No. PCT/EP99/00963 filed 13 February 1999 and which named the United States as a designated country. PCT Application PCT/EP99/00963 was published on 26 August 1999 as Publication No. WO 99/41967 and claims priority of German Application 198 07 145.0 filed on 20 February 1998.

In the Claims

2. (Amended) A [device on a] combine harvester as in claim [1]17, wherein the setting of the sieve opening width and the rotational speed of the fan is effected automatically in dependence on the measuring signal from the load sensor.

3. (Twice Amended) A [device on a] combine harvester as in claim [1]17, wherein the load sensor detects the amount of straw in a feeder housing of the combine harvester.

4. (Amended) A [device on a] combine harvester as in claim [1]17, wherein the load sensor detects the moisture content of the straw.

5. (Amended) A [device on a] combine harvester as in claim [1]17, wherein the load sensor detects the amount of crop being harvested.

6. (Amended) A [device on a] combine harvester as in claim [1] 17, wherein the load sensor detects the ground speed of the combine harvester.

7. (Amended) A [device on a] combine harvester as in claim [1] 17, wherein the setting of the opening width of the sieve device is dependent on the rotational speed of the fan.

8. (Amended) A [device on a] combine harvester as in claim [1] 17, including an evaluating unit for calculating ⁴⁴ a control signal representative of the desired cleansing setting by means of a programmed function in dependence on the measuring signal.

9. (Amended) A [device on a] combine harvester as in claim 8, wherein the evaluating unit comprises a memory in which a plurality of previously determined dependencies between the desired sieve opening widths and/or the rotational speed of the fan and at least one measuring signal are stored in the form of a table or a characteristic curve or a family of characteristic curves, whereby the control signal is determined with the aid of the table or the characteristic curve.

✓10. (Amended) A [device on a] combine harvester as in claim 8, wherein the evaluating unit determines the cleansing setting from a combination of several measuring signals.

11. (Amended) A [device on a] combine harvester as in claim 8, wherein a new setting for the cleaning mechanism is produced by the evaluating unit in such a manner that the altered setting only becomes effective when the crop has traversed the path between the load sensor and the cleaning mechanism.

12. (Amended) A [device on a] combine harvester as in claim [1] 17, including means for altering the programmed function and the stored dependencies.

✓13. (Amended) A [device on a] combine harvester as in claim [1]17, wherein the sieve device comprises an upper sieve and a lower sieve whose opening widths are each adjustable by means of a respective adjusting member whereby the opening width of the upper sieve and the opening width of the lower sieve are adjustable to different extents in dependence on the measuring signal.

14. (Amended) A [device on a] combine harvester as in claim 13, wherein at least one of the upper and lower sieves comprises at least two sub-sieves whose opening widths are each adjustable by means of a respective adjusting member whereby the opening widths of the sub-sieves are adjustable to different extents in dependence on the measuring signal.

15. (Amended) A [device on a] combine harvester as in claim [1]17, including means for restricting the possible adjustment ranges by predetermined limiting values.

17. (Twice Amended) A combine harvester incorporating a cleaning mechanism which comprises a sieve for cleaning the crop produced by a threshing and separating mechanism[s], a fan for forcing a blast of air through the sieve device, an adjusting member for automatically adjusting [the] opening widths of the sieve device, at least one load sensor having a [test] signal which is a measure of the loading to which the cleaning mechanism is subjected by the threshed crop, whereby the adjusting of the sieve opening width is effected automatically only in dependence on the [test] measuring signal from the load sensor.